Spot Safety Project Evaluation

Project Log # 200505119

Spot Safety Project # 09-98-211

Spot Safety Project Evaluation of guardrail installation at overhead sign support on I 40 (0.9 mile east of NC 109) in Forsyth County

Documents Prepared By:

Safety Evaluation Group
Traffic Safety Systems Management Section
Traffic Engineering and Safety Systems Branch
North Carolina Department of Transportation

Principal Investigator

_____ 03-20-2006
Samuel D. Coleman, EI Date

Traffic Safety Project Engineer

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 09-98-211 – Guardrail installation at overhead sign support located in the median on I 40 (0.9 mile east of NC 109) in Forsyth County.

Introduction

In an attempt to assess the safety of our roads, the Safety Evaluation Group of the Traffic Safety Systems Management Section has evaluated the above project. The methodologies used in this evaluation offer various philosophies and ideas, in an effort to provide objective countermeasure crash reduction results. A naive before and after analysis of the treatment data has been completed to measure the effectiveness of the spot safety improvement. Additional analysis methods were not utilized for this evaluation because a suitable comparison group was unattainable. This information is provided to you so the benefit or lack of benefit for this type of project can be recognized and utilized for future projects.

Project Information and Background from the Project File Folder

I 40 is a six-lane freeway with a 46-foot grassed median and a speed limit of 65 mph. The original problem stated was that vehicles were unprotected in the event of a collision with the steel overhead sign support located in the median of I 40. There were two known crashes involving vehicles running off the road and striking the sign support between 1/1/96 and 12/31/97. The spot safety project improvement countermeasure chosen for the subject location was the installation of guardrail around the overhead sign support in the median. The final completion date for the installation of the guardrail was March 31, 1999 at a cost of $7,000.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with all the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period was from February 1999 through April 1999. The before period consisted of reported crashes from August 1, 1992 through January 31, 1999 (6 Years 6 Months) and the after period consisted of reported crashes from May 1, 1999 through October 31, 2005 (6 Years 6 Months). The ending date for this analysis was determined by the available crash data at the time the crash analysis was completed.

The analysis consisted of the treatment data along I 40 from MP 13.71 to 13.91 (500 feet east and west from the overhead message board) with a 0’ y-line. The following data table depicts the Naive Before and After Analysis for the previous information. Please note, the vehicles that collided with the overhead sign support were the target crashes for the applied countermeasure.

Treatment Information			
	Before	**After**	**Percent Reduction (-) Percent Increase (+)**
Total crashes	11	22	100.0
Total Severity Index	12.6	8.2	-35.3
Target Crashes	2	1	-50.0
Target Crash Severity Index	8.4	8.4	0.0
Volume	66000	74000	12.1
Eastbound Crashes	6	13	116.7
Westbound Crashes	5	9	80.0

Table 1.

The naive before and after analysis at the treatment location resulted in a 100.0 percent increase in Total Crashes, a 50.0 percent decrease in Target Crashes, and a 12.1 percent increase in Average Daily Traffic (ADT). The before period ADT year was 1996 and the after period ADT year was 2002.

Results and Discussion

The naive before and after analysis involving the treatment before data versus treatment after data resulted in a 100.0 percent increase in Total Crashes and a 50.0 percent decrease in Target Crashes. The summary results above demonstrate that the treatment location appears to have had an increase in the number of Total Crashes and a decrease in the number of Target Crashes from the before to the after period.

Referencing the photos, the guardrail was placed around the sign support in the median. It seems the guardrail installation may perform its intended function of reducing the severity of a crash at this location. However, information from the crash reports show two out of the three total crashes with the overhead message board were along the right shoulder in the westbound lanes resulting in class B and C injuries. Protection for this sign support may also need to be evaluated.

The photos from the field visit show that there was a potential for vehicles to travel through the gaps between the median barrier and the sign support. The guardrail installation may reduce this potential and lower the possibility of a cross-median crash due to its length and placement.

As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of intersection.


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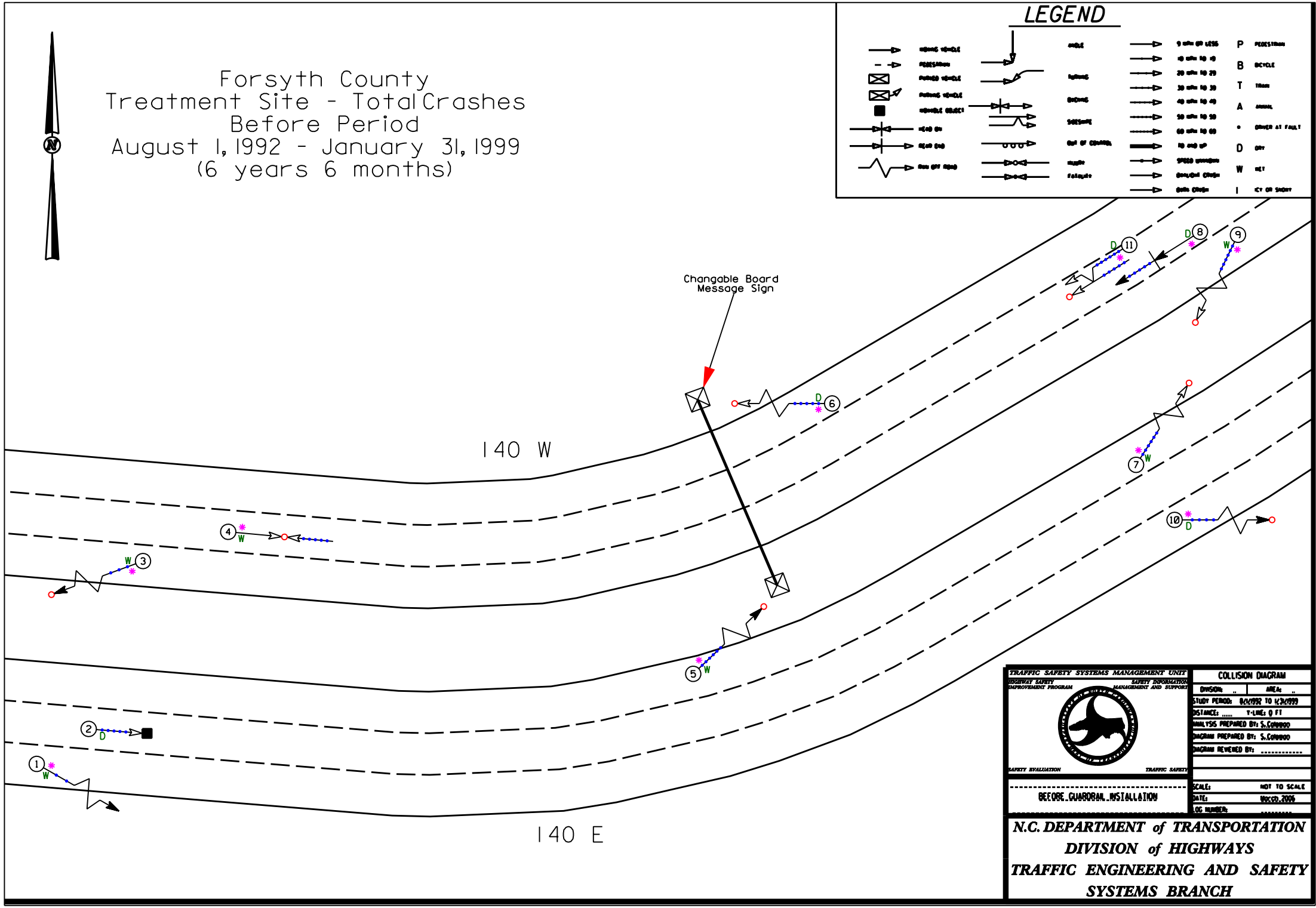
Google
Pointer 36°03'32.46" N 80°11'51.28" W elev 862 ft
Streaming 100%
Eye alt 2514 ft

Treatment Site Photos taken November 14, 2005

Facing West



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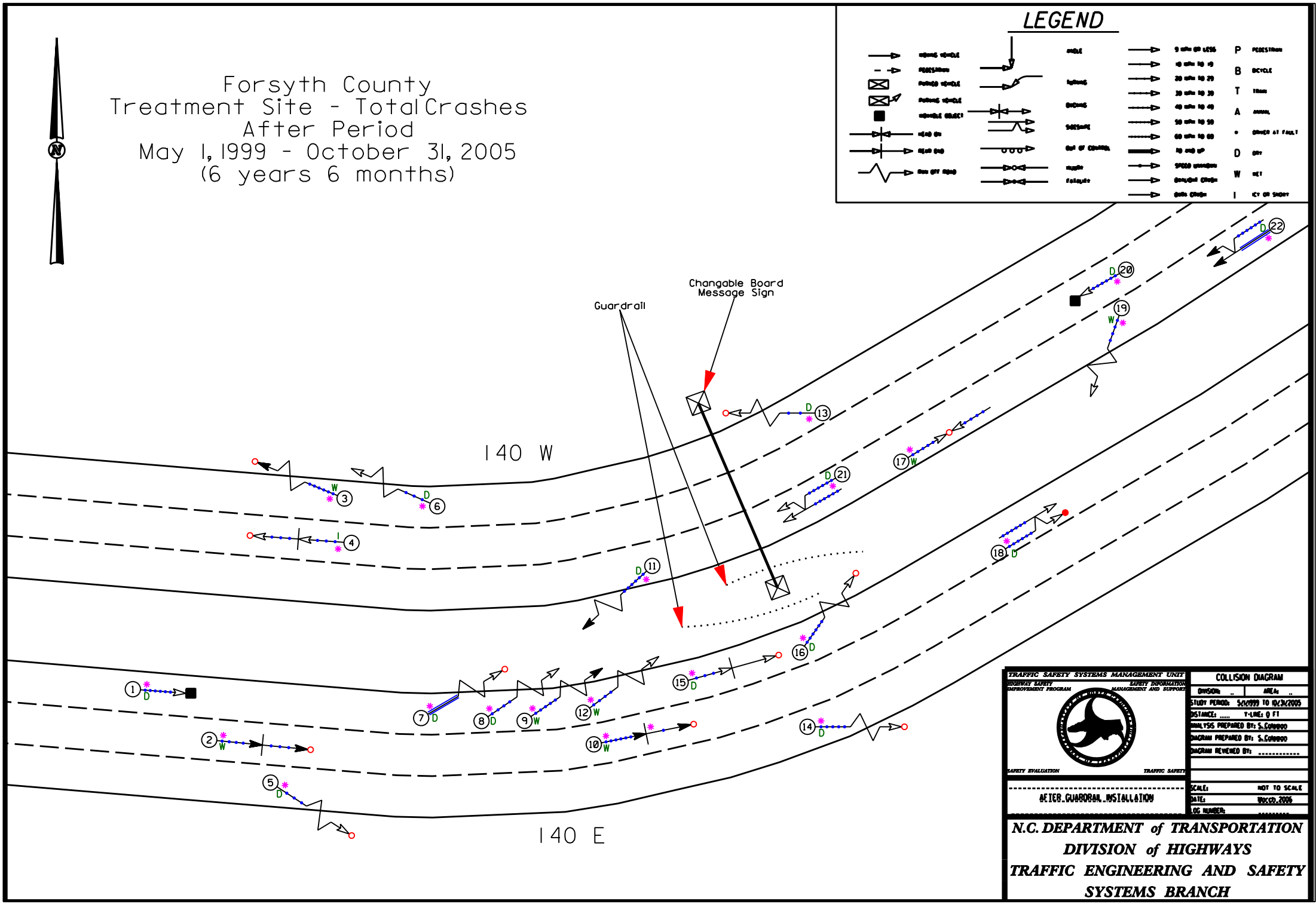

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